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Robin Chandler

*University of California, Santa Cruz*

Kevin Clarke

*University of California, Santa Cruz*

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### Building the Grateful Dead Archive Online: A Technical View of the Golden Road to Unlimited Devotion

By Robin Chandler and Kevin Clarke, University of California, Santa Cruz

During their 30-year career, the Grateful Dead played more than two thousand shows, never playing the same set list twice or a given song in the same way. Improvisation was the key: continuous improvement resulted in ambitious compositions and high-quality performances that also featured audience participation. As David Shenk and Steve Silberman have observed in *Skeleton Key: A Dictionary for Deadheads*, “The places in songs where jamming begins are like points of embarkation into wild unmapped territory...and near the fertile edge of disorder, new melodies appear, leading into another song.”<sup>1</sup>

Recipient of a two-year 2009 Institute of Museum and Library Services (IMLS) grant, the University of California, Santa Cruz (UCSC) Library staff has successfully and creatively “jammed” to apply archival and digital library work flows to build the Grateful Dead Archive Online (GDAO): [www.gdao.org](http://www.gdao.org). The Grateful Dead Archive (GDA) represents one of the most significant popular culture collections of the twentieth century and documents the band’s activity and influence in contemporary music from 1965 to 1995. Donated to the UCSC Library in 2008 by Grateful Dead Productions, Inc., the GDA contains over six hundred linear feet of material featuring works by famous rock photographers and artists of the era, including Herb Green, Stanley Mouse, Wes Wilson, and Susana Millman. The GDA also includes business correspondence and financial records, fan envelopes, fanzines, tickets, t-shirts, video documentaries and performances, radio interviews, and 3-dimensional objects. GDAO features over 50,000 digitized items drawn from the Grateful Dead Archive and from digital content submitted by the community and global network of Grateful Dead fans, as well as Web resources, such as David Dodd’s “The Annotated Grateful Dead Lyrics” Web site and the fan recordings of concerts contributed to the Internet Archive. GDAO is powered by the open source Web publishing platform Omeka, which supports the display of collections and exhibits, the use of social media tools, and the uploading of user contributions. Omeka also allows for community-developed plug-ins to enhance the software. The Grateful Dead promoted a sense of community among their fans, and it was a natural progression for UCSC to seek to build a socially constructed collection featuring “audi-

ence participation” that leverages social media tools to tag, comment, upload, and share digital files, memories, and knowledge. With the release of GDAO on June 29, 2012, UCSC began actively collecting artifacts from an enthusiastic community of Grateful Dead fans.

GDAO integrates multiple technical systems to deliver and preserve digital content, and uses open source software whenever possible. Six main components encompass GDAO’s application architecture: Web service, search, database, images, streaming media, and shared file system. To begin, CONTENTdm provides the digital object metadata and optical character recognition (OCR) authoring tools employed to populate the Web site. GDAO leverages Omeka to support blogs, exhibits, and social media tools, as well as the integration of multiple browsing mechanisms that leverage subject, GIS, and date metadata to access digital objects via facets (item type, creator, venue, year, and subject), Google Maps to browse shows (powered by the Omeka geolocation plug-in), and a timeline of significant events in the history of the band (powered by the Omeka timeline plug-in Neatline). Solr is the platform that powers keyword and advanced search across Omeka collections. GDAO features the OpenSeadragon image viewer Kaltura, integrated into GDAO’s digital object view, to stream audio and video content. The Djatoka open source Java-based Web image server supports GDAO with the creation of custom image sizes and efficient image processing work flows to access and preserve image files in multiple repositories, including Omeka, CONTENTdm, and the California Digital Library’s (CDL) Merritt Preservation Repository. In addition, GDAO leverages other CDL services, including the EZID ARK ([www.cdlib.org/uc3/eid](http://www.cdlib.org/uc3/eid)) minting service to create and resolve persistent identifiers and the Web Archiving Service (WAS) ([webarchives.cdlib.org](http://webarchives.cdlib.org)) to crawl and preserve Web resources that document the Grateful Dead.

In the course of developing the GDAO Web site, the Grateful Dead Information Technology (GDIT) team enabled several significant project outcomes that will benefit Omeka users and the digital library and archives community at large. GDAO features a curatorial review process that encourages the user community to add value

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to contributions through comments, tagging, and flagging inappropriate submissions. From the technical perspective, this has resulted in the creation of several tools for the digital library and archives community, including routinely assigned ARKs (Archival Resource Keys) to Omeka User Submissions, and mechanisms and work flows to export METS, MODS, and PREMIS metadata for Omeka digital objects for inclusion in another service or preservation repository, as well as a PHP METS library for use with Omeka. As part of integrating Djatoka into our services, the GDIT team modified the image server to accommodate high-use loads by integrating the Pairtree Filesystem (developed by the CDL), and created a Djatoka RESTful interface to support easier caching of images. In addition, the javascript-based image interface OpenSeadragon was integrated into Djatoka. We selected OpenSeadragon for GDAO because it provided a dynamic interface supporting user zoom-in and zoom-out of images, while requiring a limited number of pre-generated image tiles. GDAO broke ground in the Omeka community by implementing the first Omeka instance to use a master-master database configuration to separate reads from writes, which enables better database scaling across the virtualized storage

network supporting the Web site. GDAO also enabled a distributed Solr configuration to function across multiple virtualized search servers without necessitating any core code changes to Omeka. Lastly, because we were building GDAO and implementing the Omeka Neatline Timeline and the SolrSearch while these plug-ins were under active development by Omeka developers at George Mason University and the University of Virginia, we served as beta testers providing valuable feedback for community tool development while simultaneously supporting our local implementation.

While GDAO's technical development was primarily a product of UCSC Library GDIT staff, the project benefited from collaborations and partnerships with several individuals and organizations. Developers at George Mason University and the University of Virginia supported our enhancements of existing Omeka plug-ins and integration of new services. Brewster Kahle generously supported our work to integrate into GDAO the metadata for the fan recordings preserved and made accessible by the Internet Archive. The UCSC Library has also worked closely with

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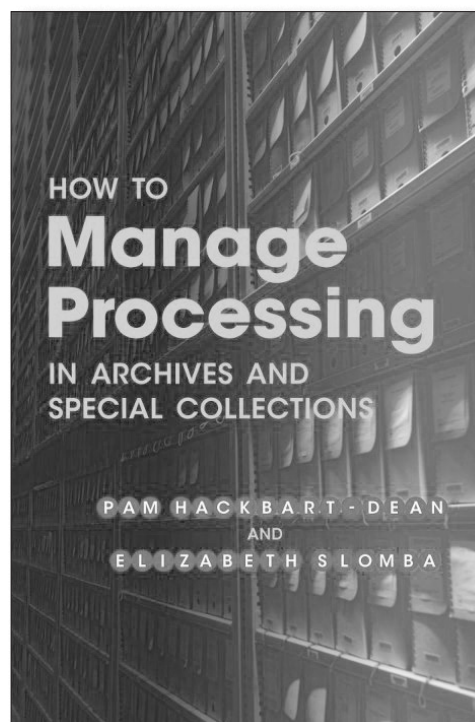
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*How to Manage Processing in Archives and Special Collections* by Pam Hackbart-Dean and Elizabeth Slomba is an invaluable resource that breaks down what you need to know to establish or revitalize your processing program, and provides effective methods to help you succeed. The resource is packed with information about:

- Creating a framework for a processing program, including developing processing policies, priorities, and strategies;
- Managing the day-to-day work of processing assessment techniques;
- Implementing best practices and standards;
- Administering a patron-based approach to managing processing;
- Effectively assessing the demands for descriptions and item-level cataloging to make collections available more swiftly; and
- Applying standards in the adoption of trends and new concepts in processing and in handling outside demands.

Whether you manage numerous archivists, operate as one member of a processing team, or operate as a lone arranger, *How to Manage Processing in Archives and Special Collections* is your go-to guide for developing and managing a processing program. With an effective processing program in place, your archives will be better positioned to help users find the materials they need.



The book is available through the SAA to its members at a reduced price of \$49.95. More information is available at <http://saa.archivists.org/4DCGI/store/item.html?Action=StoreItem&Item=2663&LoginPref=1>.

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the CDL University of California Curation Center (UC3) staff to implement a variety of tools or “microservices” that support the Web site and the curation of digital assets.

Since release at the end of June 2012, we have tracked usage demographics using Google Analytics. GDAO has experienced over 60,000 visits to over 375,000 pages; 72% of those were unique visitors (numbering over 44,000) spanning the globe. While the majority of visitors came from the United States, the top 10 countries visiting GDAO included Canada, the United Kingdom, Germany, Japan, Spain, France, Australia, Sweden, and Italy. During that time, users have also submitted nearly 50 digital images and files documenting their Grateful Dead experiences through artwork, personal photographs, tickets, and stories about how they became Deadheads, and revealing

their favorite show or song. Looking ahead, the GDAO project team has plans to continue digitizing materials from the GDA and making materials accessible on-line, including selected correspondence, additional photograph collections, newspaper articles, and oral history interviews. Additionally, the staff at the UCSC Library plans to continue developing Omeka plug-ins, work flows, and tools to manage, preserve, and make accessible a range of resources, including user-submitted digital content, curated digital content selected from Web 2.0 applications, and digital files created from analog resources or acquired by special collections.

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### **Notes**

1. David Shenk and Steve Silberman, *Skeleton Key: A Dictionary for Deadheads* (New York: A Main Street Book 1994): 161–62.